Attorney Dock Number: 07072-131001 Client Dock Number: EMC 00-190

CLAIMS

1. A method for scanning a message-list accessible to a plurality of processors, said method comprising:

identifying, in said message-list, a message-slot containing a message intended for a recipient processor from said plurality of processors;

obtaining, from said identified message-slot, information indicative of a location of a succeeding message-slot in said message-list; and

caching, for retrieval during a subsequent scan of said message-list, said information indicative of said location of said succeeding message-slot.

- 2. The method of claim 1, wherein obtaining information indicative of said location of said succeeding message-slot comprises obtaining a next-message pointer from said identified message-slot.
- 3. The method of claim 1, wherein caching said information indicative of said location of said succeeding message-slot comprises storing said information in a memory local to said recipient processor.
- 4. The method of claim 1, wherein caching said information indicative of said location of said succeeding message-slot comprises:

determining if a reset condition exists; and caching said information if no reset condition exists.

5. The method of claim 4, wherein determining whether a reset condition exists comprises determining whether said information indicative of said location of said succeeding message-slot identifies an invalid location.



Attorney Dock Number: 07072-131001 Client Dock Number: EMC 00-190

- 6. The method of claim 4, wherein determining whether a reset condition exists comprises determining whether a number of scans since a previous occurrence of a reset condition exceeds a threshold.
- 7. A method for scanning a message-list accessible to a plurality of processors, said method comprising:

retrieving, from a cache associated with a scanning processor from said plurality of processors, information identifying a starting message-slot; and

beginning a scan of said message-list at said starting message-slot.

- 8. The method of claim 7, wherein retrieving information identifying a starting message-slot comprises retrieving a pointer to a message subsequent to a previous message intended for said scanning processor.
- 9. The method of claim 7, wherein beginning a scan of said message-list comprises:

 determining whether a reset condition exists; and

beginning said scan at said starting message-slot if no reset condition exists.

- 10. The method of claim 9, wherein determining whether a reset condition exists comprises determining whether said information indicative of said location of said starting message-slot identifies an invalid location.
- 11. The method of claim 9, wherein determining whether a reset condition exists comprises determining whether a number of scans since a previous occurrence of a reset condition exceeds a threshold.
- 12. A data-storage system comprising:

a plurality of processors, each processor having a local memory;



Attorney Dock Number: 07072-131001 Client Dd Number: EMC 00-190

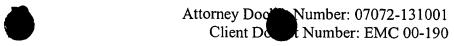
- a shared memory accessible to each processor in said plurality of processors;
- a message section in said shared memory, said message section including a message-list having an ordered sequence of message-slots, each of said message-slots including information identifying a succeeding slot in said message-list.
- 13. The data-storage system of claim 12, wherein said local memory comprises a cache for storage of said information identifying a succeeding slot.
- 14. The data-storage system of claim 13, wherein said cache comprises a look-ahead pointer identifying said succeeding message-slot.
- 15. The data-storage system of claim 14, wherein said local memory comprises a counter indicating an interval since a scanning processor encountered a message-slot containing a message for which said scanning processor was an intended recipient.
- 16. The data-storage system of claim 15, wherein said counter indicates a number of scans since a scanning processor encountered a message-slot containing a message for which said scanning processor was an intended recipient.
- 17. The data-storage system of claim 12, wherein said local memory further comprises a reset-detecting process configured to detect a reset condition.
- 18. The data-storage system of claim 17, wherein said reset-detecting process is configured to compare a reset threshold with an interval since a scanning processor encountered a message-slot containing a message for which said scanning processor was an intended recipient.
- 19. The data-storage system of claim 18, wherein said reset-detecting process is configured to declare a reset condition when said interval exceeds said reset threshold.

Attorney Doc Number: 07072-131001 Client Do Number: EMC 00-190

- 20. The data-storage system of claim 18, wherein said reset-detecting process is configured to detect whether said information identifying a succeeding slot in said message-slot is invalid.
- 21. The data-storage system of claim 20, wherein said reset-detecting process is configured to declare a reset condition when said information identifying a succeeding slot in said message-list is invalid.
- 22. A computer-readable medium having encoded thereon software for scanning a message-list accessible to a plurality of processors, said software comprising instructions for:

identifying, in said message-list, a message-slot containing a message intended for a recipient processor from said plurality of processors;

- obtaining, from said identified message-slot, information indicative of a location of a succeeding message-slot in said message-list; and
- caching, for retrieval during a subsequent scan of said message-list, said information indicative of said location of said succeeding message-slot.
- 23. The computer-readable medium of claim 22, wherein said instructions for obtaining information indicative of said location of said succeeding message-slot comprise instructions for obtaining a next-message pointer from said identified message-slot.
- 24. The computer-readable medium of claim 22, wherein said instructions for caching said information indicative of said location of said succeeding message-slot comprise instructions for storing said information in a memory local to said recipient processor.
- 25. The computer-readable medium of claim 22, wherein instructions for caching said information indicative of said location of said succeeding message-slot comprise instructions for:



determining if a reset condition exists; and

caching said information if no reset condition exists.

- 26. The computer-readable medium of claim 25, wherein said instructions for determining whether a reset condition exists comprise instructions for determining whether said information indicative of said location of said succeeding message-slot identifies an invalid location.
- 27. The computer-readable medium of claim 25, wherein said instructions for determining whether a reset condition exists comprise instructions for determining whether a number of scans since a previous occurrence of a reset condition exceeds a threshold.
- 28. A computer-readable medium having encoded thereon software for scanning a message-list accessible to a plurality of processors, said software comprising instructions for:

retrieving, from a cache associated with a scanning processor from said plurality of processors, information identifying a starting message-slot; and

beginning a scan of said message-list at said starting message-slot.

- 29. The computer-readable medium of claim 28, wherein said instructions for retrieving information identifying a starting message-slot comprise instructions for retrieving a pointer to a message subsequent to a previous message intended for said scanning processor.
- 30. The computer-readable medium of claim 28, wherein said instructions for beginning a scan of said message-list comprise instructions for:

determining whether a reset condition exists; and



Attorney Dock Number: 07072-131001 Client Dd Number: EMC 00-190

beginning said scan at said starting message-slot if no reset condition exists.

- 31. The computer-readable medium of claim 30, wherein said instructions for determining whether a reset condition exists comprise instructions for determining whether said information indicative of said location of said starting message-slot identifies an invalid location.
- 32. The computer-readable medium of claim 30, wherein said instructions for determining whether a reset condition exists comprise instructions for determining whether a number of scans since a previous occurrence of a reset condition exceeds a threshold.